

**B**BROKEN *Wind* is a disease frequently happening to horses. The following are the indications which mark its presence. The breathing of the horse becomes altered from its natural state, and from an easy, gentle, and uniform respiration is changed to a painful, laborious heaving, and violent agitation of the flanks, which rise by several successive undulations to a preternatural height, then suddenly relax and fall downwards beyond the natural extent of these parts; the nostrils become dilated, and held rigid and opened to their utmost extent, and the face becomes everywhere emaciated and contracted. Such are the appearances in very aggravated cases; in more recent cases these appearances are less evident, and it is a disease that can exist in every degree of mildness or violence.

When the disease has been of long standing, and little pains or care taken with the animal, as may be more particularly observed in cart horses, and horses employed in farmer's work in the country, the abdomen becomes large and pendulous; but in more recent cases, and in horses otherwise situated, we have observed that, in the early stage at least, the abdomen is rather contracted, and is painfully held up in this disorder.

Great thirst attends this disease, arising perhaps from the increased action or fever which it occasions, and which has been too often mistaken for the cause of it, and has led to the most cruel privations.

There is no disorder of the horse, perhaps, which has so much engaged the attention of anatomists, and of speculative ingenious men, as this, to discover its cause. It has, however, we believe, never yet been satisfactorily explained; at least, there is no author that we are acquainted with, that has formed any connected or probable account of it, unless perhaps very lately, and which was derived from the source we are about to mention.

Haller seems to have supposed it proceeded from a relaxed or ruptured diaphragm. Lower imagined that a relaxation or injury of the phrenic nerves might occasion it; some have assured us, after examination, that the lungs are not at all affected in this complaint, and that its seat was about the larynx and air-passages; and some of the writers on this subject have believed that the lungs were grown too big for the chest, and that this was the source of the mischief; and there have been many other conjectures equally absurd. Some thought they elucidated the nature of this disease by comparing it to a consumption, and others to an asthma. We trust something more natural and satisfactory will be found in the following statement of our observations on this singular disease.

In the year 1795, being engaged in the dissection of a grey mare that was sent to the veterinary college to be destroyed on account of this complaint, on opening the chest, the lungs appeared free from inflammation, being very white; and, as this viscus appeared free from redness and increase of colour, the general concomitant of disease, we were led for awhile to consider the lungs as not the seat of the disorder, as others had done before; now several of the pupils were present at this dissection, and on cutting into their substance no inflammation was perceivable: on examining them more closely, however, we observed a small bladder or vesicle on the outside of the lungs, in the external investing pleuritic coat; this was conceived by some who were present to be a tubercle, and that tubercles might be the cause of the broken wind. Suspecting however, from its appearance, that it was not solid, but contained air, it was punctured by one of them by my desire, and it immediately subsided. This instantly suggested to the writer of this article, that the lungs were actually in a state of *emphysema*, or in other words, that air was contained in a state of extravasation in their substance, and which not only seemed evidently the case in this instance, but which we have since fully verified by the examination and dissection of a considerable number of cases of broken wind, and found that in all it is the constant appearance. This extravasation of air into the substance of the lungs is perhaps

occasioned by a rupture of the air-cells, as suggested by Coleman at the time, unless it be formed in them, and is thrown out by some morbid operation of the blood-vessels, as sometimes happens in the intestines and *vagina*; for the exact way in which this emphysema arises has not yet been ascertained. It fully explains the cause of the white appearance of the lungs, for the membranes being separated and divided by air lodging between them partially admit the light, the puffy appearance they make also, and the crackling noise they give on the being handled, will all admit of a ready explanation by this discovery, and so do the symptoms which attend the disorder; for the common air escaping, from disease or a sudden rupture of the cells, into the membranes composing the lungs, thereby compress and obliterate more or less the natural cavities destined for the reception of the air, and thus occasion the effort we observe in overcoming this obstruction, and which naturally induces the appearances we have described as the symptoms attending this disorder: it also accounts for its incurability, and the oppression which a full stomach occasions. As the extravasation proceeds, the complaint gradually, or sometimes suddenly, increases, so as to be insupportable to the animal, and at length, being quite useless, he is necessarily destroyed. In other cases, the disease, without much increasing, may exist for many years, and indeed, till the horse dies from age, or other disease. This white appearance of the lungs it is that had deceived so long those who had been led through curiosity to examine the lungs in this complaint; it being so unusual to see any part in a state of disease, more delicately white than in its healthy state; and singular it is, that the extravasated air should not bring on an inflammation and destruction of these organs.

Horses, in bad cases of broken wind, are observed to void air in considerable quantities by the anus, as though the extravasated air of the lungs was absorbed and carried to the intestines; or it may probably be only disturbed digestion which is the cause of this; and the smiths, not unfrequently, on this account, cut through and divide the *sphincter ani*, then the power of closing the rectum is lost, and the air escapes without any noise; and they are led from hence frequently to imagine that they have cured the complaint.

We are now led to consider the cause, which in the general estimation of mankind, leads horses to this disease, viz. their being allowed too much water; and here, we apprehend, every observer of common feeling and humanity must be shocked at the recollection of what instances have fallen within his own observation of cruelty in this respect, and of what horses are daily and hourly suffering from the most barbarous of all customs, the denying a sufficiency of water to sound horses, to prevent their becoming broken-winded.

True it is, that water administered to horses in an improper manner, especially after the privation above spoken of, may become a cause of their becoming broken-winded; but would any one infer from this, that it is necessary that all horses should be kept almost entirely without water, exposed to a never-ceasing thirst, till an opportunity of gratifying the appetite in this way occurs, and the natural and healthful beverage being too largely taken, becomes a poison, and induces the very mischief which so much cruel and useless pains had been taken to avoid; for the horse that is allowed to drink frequently and as much as he likes, will never from this source become broken-winded. No horse on a common, exposed to the water of the brook, which he can partake of as often as he pleases, will ever become broken-winded from this cause, unless he had previously suffered a privation of water, and in his first excesses to overcome his thirst, injured himself. Let us now consider, under what circumstances it is advantageous to deprive a horse, for a time, of his water. The traveller, who starts in the morning on his journey, would be incommoded, if the horse's stomach was loaded with water; as it is quickly absorbed from the stomach, and, passing off in perspiration, becomes unsightly and troublesome; and though it may be true that perspiration not too heavy, by keeping a moisture on the skin, and by its evaporation, induces a coolness that might be refreshing, yet to be inundated with it would be highly disagreeable and unsightly. The water should, therefore, be given at an earlier hour in the morning, and should have time to pass off in a considerable

degree before the horse is used on the road ; and if he be deprived, in a great measure, of it during the day, he should be the more plentifully supplied with it during the night-time, so as not to create a violent thirst, which can only be gratified, the first opportunity that happens, at the expense of his health, or perhaps his existence.

Sorry should we have been, if, after much inquiry into the nature of this disease, we should have discovered that the above practice of depriving horses almost entirely of water, though cruel, was necessary ; and that we must acquiesce, with painful sensations, in the use of this custom. We are, on the contrary, convinced from experience, as well as the most incontrovertible reasoning, that the practice is as destructive and pernicious, as it is cruel and unnatural ; for we are aware, the suggestions of humanity would avail but little, where an opposite course would best serve the interests of mankind in regard to the animal ; however, they are, fortunately for it, not incompatible ; on the contrary, all the comforts he can receive will best insure his life and labours.

It should be recollected that the horse is fed on the dryest food, as corn, beans, bran, hay, &c., and this requires, to its being well digested, a certain portion of moisture, which must be either derived externally, or from the blood : and horses are often expected to work hard under these circumstances, to sweat and perspire profusely, and digest their food as well, without any water : the consequence of which is, that their dryness and thirst must arrive at a pitch that is scarcely governable : and to these causes we may add, as contributing to the mischief, the hot, crowded, low stables of large towns and cities, where they are often, in consequence of such treatment, seized with various inflammatory complaints, as affections of the limbs, eyes, brain, lungs, and other diseases. They are sometimes miserably allowed to wet their mouths on the road, and to have the water they are swallowing dashed in their faces, and this is deemed sufficient for their wants ; when, if they by any accident get to water, the consequences ensue that we have above described.

With chaises and post-coaches are ever seen the greatest number of broken-winded horses, and very naturally, because of the artificial and mischievous system pursued by the drivers of such vehicles naturally leading to it. It is a practice with the brewers' dray-horses, both in the metropolis and in the country, as often as they come home, to be let go to the trough and drink their fill ; among these, broken-winded horses are very rare, though they have all the water they can desire.

Wetting horses all over with cold water, while in a profuse sweat, we believe not to be so injurious a custom as would at first appear, if the law for its application is well understood, but, on the contrary, very beneficial and refreshing. Those who do it should be apprized of the danger of carrying it to the extent that would chill the horse, when the worst consequences would often ensue : to avoid ill effects, the horse, after this bathing, should not be left long, to stand still and chill, or in any cold place, or, draft of air ; but while his skin is yet warm (as in the case of a return post-chaise), he should be put in, and drove home, till again perspiration is fully induced upon the skin, when all danger would be prevented ; and it would be best, perhaps, not to repeat it at all, or at any rate, to the same extent, on his arrival home : as he is then to stand still in the stable, where there would be great risk of inflamed lungs, inflamed feet, or the gripes, from the blood being driven to and confined in the interior of the system.

Muddy water is often conceived to be the best for horses, and is given them in preference to clear, by some grooms. A horse, however, must arrive at an extraordinary degree of thirst before he would touch it ; and it is only better, as being in general warmer, having been exposed to the air and sun, and is certainly safer for horses than water drawn from a cold spring or deep well ; the contrast of temperature being too great with the horse heated by violent exercise ; to render the coldest water tepid, is generally an easy matter, by pouring into it a small measure of hot.

When the cause of any disease is not understood, the theories for its explanation will be numerous, vague, and unsatisfactory, and the remedies various, often opposite, and

almost infinite, and so it has been with this complaint; for there is nothing can equal the absurd nostrums recommended in books of farriery, in this disorder in particular, as well as many others; and the farther we go back, the more sure and sound is the information respecting it. The ideas of the Romans were coarse and absurd; but the Greeks appear to have had a better knowledge of it, as is seen by the following translation from the Greek writers, given by Ruellius: "*Cum in pulmonibus quid rumpi cæperit, hoc vitium πνευμωρῶξ, Graiis quasi pulmonis rupta dixeris appellatur;*" and it is afterwards much better described, in a chapter given by Theomnestus in the same work, and at considerable length, too much so to admit of being inserted in this place. Whether, however, the term *Pulmonis rupta* did really convey to their ideas the actual cause of the disorder, may be doubted by the context, any more than that broken-wind to an Englishman, or *Cheval pousif* did so to a Frenchman. The ancients appear to have had a belief in its being curable, especially before it became inveterate; the remedies they mention, however, may be fairly suspected of possessing any such power, and they understood not at all its cause.

We cannot conclude this article more usefully to the public than by cautioning them against the permission of a common practice, especially among the lower order of horse dealers, of violently squeezing the wind-pipe and throat, to ascertain if a horse be broken-winded, which is often attended with the most mischievous consequences; the cough will be in proportion to the violence of the irritation used, and this, even in cases of broken wind, unless in the very last stage of it, when other symptoms sufficiently denote it; so that, as a criterion, we believe it to be of very little value. In my case book is the following:—

A grey poney was brought to the Veterinary College, during the professorship of St. Bel in the year 1791, with great difficulty of breathing, a copious discharge of saliva from the mouth, and a running at the nose; so far it appeared somewhat like glanders; but the glands under the jaw, and all the external parts of the throat, were free from swelling. The difficulty of breathing was considerable, and threatened suffocation: this induced us to suppose some obstruction was the cause, either in the nostrils, fauces, or larynx.

The operation of bronchotomy was had recourse to, which immediately relieved him: present suffocation being thus prevented, our next plan was to remove the obstacle, which we imagined might be in the nose. The frontal bone was trepanned, and it was intended to trepan the nasal bone, but this was not executed, for the pus from the former found a way through into the nose, and the nose was injected every day, through this opening, with a warm decoction of herbs. As the orifice in the trachea every day became smaller, it was difficult to keep in the *canula*, which accidentally a few days after falling out, the horse was suffocated and expired. On opening the head, there was no obstruction anywhere to be found; on opening the larynx, the true cause was discovered.

The internal membrane that lines the trachea or windpipe was enlarged or distended with a fluid, in a way that prevented the admission of air. For this membrane was detached from the sides of the trachea, and so distended with lymph, that the two portions met each other in the centre of the pipe, forming two hemispherical tumours, which acted as valves, and completely excluded the admission of air. On cutting into these tumours, they were composed of cellular membrane, distended by a small portion of fluid: the surrounding parts did not bear any marks of inflammation. If these tumours had formed on one side only, they might have been attributed, perhaps, to some puncture, or some injury from bleeding, or other cause of this sort; but being on both sides of the throat, it is probable both sides must have been irritated, to produce it, and nothing so likely as violent compression of that sort we see men use when they propose to try horses for broken wind; for they endeavour to squeeze the pipe till both sides meet, otherwise the horse will not cough, or only slightly. Since this, another exactly similar case was brought to one of the slaughter-houses of town, while we were casually staying there, and the horse was said to die of suffocation, they could not tell why. On examining the larynx, a similar mischief was discovered.

During the last six years (1805), we have opened more than ten horses that were broken-winded, and uniformly found the lungs emphysematous ; and since then, a vast number with the same results.

Violent breathing and appearances, in every respect like broken wind, also attend other affections where the lungs are injured, as in the case of large abscesses forming in the lungs, water thrown out in the chest, in roarers, and even violent pain in any part of the body, will produce appearances resembling broken wind, which again disappear when those affections are removed. I once saw all the symptoms here described of broken wind, brought on by excessive pain, which happened to a roan horse, from the pressure of the shoe upon the inflexion or intertortional part of the sole, or corn place, and to which the removal of the shoe, and its being considerably shortened at this part, gave immediate and lasting relief.

When the stomach becomes loaded, especially with water, all the symptoms of this disorder are greatly increased, and are then more easily remarked, especially on exercise ; it is, therefore, one of the most sure means of ascertaining it ; and on this account, horses with this complaint, are in general kept from drinking great quantities of water, which they are much disposed to do, probably from the fever observed to attend it, and also, perhaps, from the blood in the lungs not undergoing so completely the changes it ought to do in that viscus.

To ride a horse at all hard upon a full stomach, whether of water or food, would, by its pressure against the diaphragm and lungs be sufficient to bring on this disorder, and ought, therefore, always to be avoided.

Some horses are differently affected in broken wind to others : the respiration is quickened in some without much heaving, and the abdomen in such is contracted and hard, instead of being large and pendulous. It is also sometimes attended with a cough, which is not deep, but short and hard, as though the lungs resisted perfectly the impulse of this exertion. On exercise the cough is often much increased, after which he seems relieved ; the head in coughing is held low, his neck stretched out as though he endeavoured to bring something from his throat : “ *quasi ossicula devorasset*,” as the Greeks describe it ; and the face has a rigid emaciated appearance, resembling, though less violent, that constriction which attends lock-jaw. The eyes are often yellow from diffused bile ; and the nostrils, as we have said, dilated and rigid. The appetite, or desire of food at least, is not affected by it, if anything it is increased.

Dr. Bailly has also confirmed the same appearances as existing in the human asthma of some particular kinds, and it is accompanied with the same light colour and puffy appearance of the organs.

The writer of this article endeavoured to rupture the cells of the lungs of a sound horse, by inflating them, and laying weights upon them, and found that no moderate pressure would do it ; indeed when removed from the body, no experiment could be very satisfactory, and he desisted from farther experiments with this design, in this way. He also has found that the heaving of the flanks and the other symptoms were very much alleviated and relieved by a small drench of linseed oil, in the formula given in the *Pharmacopœia Equina*, p. 33, 3rd. ed. administered fasting, the horse being used upon it.

